

With regard to the rejection of claims 7-10 under 35 U.S.C. §112, second paragraph, claims 7-10 have been amended to recite the feature that one of the brackets is closed at at least one side of the rotor, an electric appliance is disposed with respect to a side surface portion of one of the brackets and at least one cooling fan is provided. Applicants submit that the amendments to claims 7-10 are responsive to the points raised by the Examiner and such claims should now be considered to be in compliance with 35 U.S.C. §112, second paragraph.

As to the rejection of claims 1, 5, 7 and 9 under 35 U.S.C. 102(b) as being anticipated by Tsuruhara; the rejection of claims 2, 8 under 35 U.S.C. 103(a) as being unpatentable over Tsuruhara in view of Baker et al; the rejection of claims 3 and 4 under 35 U.S.C. 103(a) as being unpatentable over Tsuruhara in view of Baker et al and further in view of Gilliland et al; and the rejection of claims 6 and 10 under 35 U.S.C. 103(a) as being unpatentable over Tsuruhara in view of Yoshioka; such rejections are traversed insofar as they are applicable to the present claims, and reconsideration and withdrawal of the rejections are respectfully requested.

At the outset, as to the requirements to support a rejection under 35 U.S.C. 102, reference is made to the decision of In re Robertson, 49 USPQ 2d 1949 (Fed. Cir. 1999), wherein the court pointed out that anticipation under 35 U.S.C. §102 requires that each and every element as set forth in the claim is found, either expressly or inherently described in a single prior art reference. As noted by the court, if the prior art reference does not expressly set forth a particular element of the claim, that reference still may anticipate if the element is "inherent" in its disclosure. To establish inherency, the extrinsic evidence "must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill." Moreover, the court pointed out that inherency, however, may not be established by probabilities or

possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.

With regard to the requirements to support a rejection under 35 U.S.C. 103, reference is made to the decision of In re Fine, 5 USPQ 2d 1596 (Fed. Cir. 1988), wherein the court pointed out that the PTO has the burden under §103 to establish a prima facie case of obviousness and can satisfy this burden only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references. As noted by the court, whether a particular combination might be "obvious to try" is not a legitimate test of patentability and obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching or suggestion supporting the combination. As further noted by the court, one cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention.

Furthermore, such requirements have been clarified in the recent decision of In re Lee, 61 USPQ 2d 1430 (Fed. Cir. 2002) wherein the court in reversing an obviousness rejection indicated that deficiencies of the cited references cannot be remedied with conclusions about what is "basic knowledge" or "common knowledge".

The court pointed out:

The Examiner's conclusory statements that "the demonstration mode is just a programmable feature which can be used in many different device[s] for providing automatic introduction by adding the proper programming software" and that "another motivation would be that the automatic demonstration mode is user friendly and it functions as a tutorial" do not adequately address the issue of motivation to combine. This factual question of motivation is immaterial to patentability, and could not be resolved on subjected belief and unknown authority. It is improper, in determining whether a person of ordinary skill would have been led to this combination of references, simply to "[use] that which the inventor taught against its teacher."... Thus, the Board must not

only assure that the requisite findings are made, based on evidence of record, but must also explain the reasoning by which the findings are deemed to support the agency's conclusion. (emphasis added)

Applicants note that by the present amendment, the structural arrangement of the cooling fan and cooling fin as recited in independent claims 1 and 7 has been clarified. Turning to Fig. 1 of the drawings, in accordance with the present invention, there is provided a cooling fan 51 and a cooling fin 52 which oppose one another in the axial direction as more clearly illustrated in Fig. 4 of the drawings of this application, the rotor shaft 6 being an axially extending rotor shaft to which the rotor is attached. The configuration of the cooling fan 51 and the cooling fin 52 is more clearly illustrated in Figs. 7-9 of the drawings of this application, and as illustrated in Fig. 4, and as described at page 16, line 23 et. seq. of the specification of this application, upon rotation of the rotor 1, the cooling fan 51 attached thereon rotates so that air is sucked up from the central portion of the cooling fan 51 as represented by the air flow arrow 54 and is emitted from the outer peripheral portion of the cooling fan 51, where upon it is guided via the cooling fin 52 which opposes the cooling fan 51 in an axial direction of the rotor so as to generate a circulating air flow as represented by the arrows which passes via the cooling fin 52 to the center portion, wherein it is again sucked up by the cooling fan 51. As described, such circulating flow is effected smoothly with low noise and with less pressure loss, and obtains an improvement in cooling efficiency as described at pages 17-20 of the specification, for example. By the present amendment, each of independent claims 7 and 10 have been amended to more clearly recite the aforementioned features with the recitation that in addition to a cooling fan, a cooling fin is provided in the vicinity of the cooling liquid passages and the cooling fin is arranged so as to oppose the cooling fan in an axial direction of the rotor so as to enable generation of a circulating cooling air flow which flows from the cooling fan via the cooling fin to return to the cooling fan as clearly illustrated in Fig. 4 of the drawings of this

application. Applicants submit that such features as now recited in independent claims 1 and 7 and therewith the dependent claims, including new dependent claims 15 and 16, patentably distinguish over the cited art as will become clear from the following discussion.

Turning to Tsuruhara, irrespective of the Examiner's contentions that this patent discloses a cooling fan 35 provided at the closing side of the rotor and a cooling fin 17 provided in vicinity of the cooling passages, opposing to the cooling fan, applicants note that as illustrated in Figs. 1 and 3 of such patent, the fin 17 is disposed radially outwardly of the fan 35. It is readily apparent that the fin 17 is not opposed to the fan 35 in the axial direction of the rotor and the arrangement is such that generation of a circulating air flow from the cooling fan via the cooling fin to return to the cooling fan as recited in each of independent claims 1 and 7 and the dependent claims thereof. Furthermore, while the Examiner contends that the cooling fan 35 is provided at the closing side of the rotor, it is noted that the claims of this application recite brackets and in accordance with the present invention, one of the brackets is closed at one side of the rotor, the cooling fan being provided at the closing side of the rotor. Applicants submit that in Tsuruhara, the fan 35 is provided at the open side of the rotor since the other side of the rotor is closed by the bracket. Furthermore, as pointed out above, the present invention enables reduction in noise, the cooling fin is provided in a lower stream side from the fan and has a drawback that a large noise level is generated thereby. It is apparent that Tsuruhara does not disclose or teach the claimed features as recited in independent claims 1 and 7 and the dependent claims of this application in the sense of 35 U.S.C. 102 or 35 U.S.C. 103, such that applicants submit that independent claims 1 and 7 and the dependent claims thereof patentably distinguish over Tsuruhara in the sense of 35 U.S.C. 102 and 35 U.S.C. 103 and should be considered allowable thereover.

With respect to the secondary references of Baker et al, Gilliland et al and Yoshioka, applicants submit that none of these references disclose the claimed features concerning the cooling fan and cooling fin and the obtaining of a circulating air flow as now recited in independent claims 1 and 7 and the dependent claims thereof, which features are not disclosed or taught by Tsuruhara, such that the additionally cited art does not overcome the deficiencies of Tsuruhara as pointed out above. Irrespective of whether or not the secondary references may disclose individual features, applicants submit that it cannot be considered obvious to combine any of Baker et al, Gilliland et al and Yoshioka with Tsuruhara and obtain the recited features of independent claims 1 and 7 and the dependent claims thereof. Moreover, applicants submit that any attempt to combine such references, which will not result in the claimed invention as recited in claims 1 and 7 represents a hindsight reconstruction attempt utilizing the principle of "obvious to try" which is not the standard of 35 U.S.C. 103. See In re Fine, supra. Thus, applicants submit that independent claims 1 and 7 and the dependent claims patentably distinguish over this proposed combination of references in the sense of 35 U.S.C. 103 and should be considered allowable thereover.

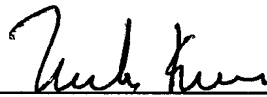
With regard to the dependent claims, applicants note that the dependent claims recite additional features and whether or not such additional features may be considered to be disclosed by the secondary references, as contended by the Examiner, it is apparent that such combination fails to provide the claimed features as recited in this application which enable the circulating air flow and such features patentably distinguish over this cited art in the sense of 35 U.S.C. 103. Thus, the dependent claims further patentably distinguish over the cited art and should be considered allowable thereover.

In view of the above amendments and remarks, applicants submit that all claims present in this application patentably distinguish over the cited art and should

now be in condition for allowance. Accordingly, issuance of an action of a favorable nature is courteously solicited.

To the extent necessary, applicant's petition for an extension of time under 37 CFR 1.136. Please charge any shortage in the fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 01-2135 (520.41115X00) and please credit any excess fees to such deposit account.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Melvin Kraus", is written over a horizontal line.

Melvin Kraus
Registration No. 22,466
ANTONELLI, TERRY, STOUT & KRAUS, LLP

MK/cee
(703) 312-6600

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION:

Page 10, please amend the paragraph beginning at line 11 as follows:

A part or the entire of the stator coil 11 is covered with a good heat-conductive resin 40, such as a silicon resin, etc., having a relative good thermal or heat conductivity, and further a part of the good heat-conductive resin 40 is in closely contact with an inner surface of the bracket 70. However, after fitting or inserting the stator 12 into the rear bracket-~~12~~26, the good heat-conductive resin 40 may be inject into the space defined by a rear bracket 26 and the stator coil 11, so that it covers the part or the entire of the stator coil 11. With doing so, it is possible to fill up with the good heat-conductive resin 40 even in and around the stator coil 11 wound around inside the stator core. However, with the material, the position to be filled with, and an amount of use thereof, it is preferable to select the good heat-conductive resin 40 depending on an amount of the heat generation in the stator core 10 and in the stator coil 11.

Page 11, please amend the paragraph beginning at line 30 as follows:

Onto the partition member 26b is fixed a voltage regulator 30 for maintaining the voltage generated at a constant irrespective of rotation speed thereof by adjusting current to the excitation coil 4, and a rectifier 29 for converting AC generated by the stator coil 11 into DC. Preferably, both the voltage regulator 30 and the rectifier 29 are in good thermal contact with the partition member 26b, by using a grease, etc., for obtaining good heat radiation thereto. The voltage regulator and the rectifier 29 constitute a part of the electric appliances. The partition member 26b separates between a side of the slip ring, the voltage regulator 30 and the rectifier 29, and a side of the rotor 1 and the stator 12, and it also functions as a means for conducting heat from the rear bracket body 26 to a rear bracket cover-~~26d~~28.

However, the voltage regulator 30 and the rectifier 29 may be so constructed that each one is fixed onto the rear bracket body 26a directly, if being better in workability of assembling. Also, with the brushes 8 and the brush rings 9, it is necessary to take the provision of, such as, a partition wall, etc., into the consideration, for the purpose of separating them from the surroundings thereof, so that brush powder generated from the friction between both will not fly all over the other parts, thereby causing no breakdown of insulation, etc., for example, in the rectifier 29.

IN THE CLAIMS:

Please amend claims 1, 7, 9 and 10 as follows:

1. (amended) An alternator for use in a vehicle, comprising:

a stator having a stator core being formed in a cylindrical shape and a stator coil wound around said stator core;

a rotor having pole cores and an excitation coil, being attached on ~~a~~an axially extending rotation shaft, so as to be located within said stator;

brackets, being thermally connected to said stator for supporting said stator, for supporting said rotation shaft at both sides of said rotor, and being closed at one side of said rotor;

cooling liquid passages provided in said brackets;

a cooling fan provided at the closing side of said rotor; and

a cooling fin provided in vicinity of said cooling liquid passages, ~~opposing to~~
said cooling fin being arranged so as to oppose said cooling fan in an axial direction of said rotor so as to enable generation of a circulating cooling air flow which flows from said cooling fan via said cooling fin to return to said cooling fan.

7. (amended) An alternator for use in a vehicle, comprising:

a stator having a stator core being formed in a cylindrical shape and a stator coil wound around said stator core;

a rotor having pole cores and an excitation coil, being attached on a an axially extending rotation shaft, so as to be located within said stator;

brackets, being thermally connected to an outer periphery of said stator for supporting said stator, for supporting said rotation shaft at both sides of said rotor, and one of said brackets being closed at at least one side of said rotor;

an electric appliance disposed ~~on a side of~~ with respect to a side surface portion of ~~said bracket~~ one of said brackets for supporting said stator, ~~being opposite to the rotor;~~

cooling liquid passages having an outer peripheral cooling liquid passage formed on an outer peripheral portion of at least the one of said ~~bracket~~ brackets for supporting said stator, and a side surface cooling liquid passage formed on ~~the a~~ side surface portion of the one of said ~~bracket~~ closing at brackets which closes the one side of said rotor;

a at least one cooling fan, said at least one cooling fan being provided at the closed side of said rotor; and

a cooling fin provided in vicinity of said side surface cooling liquid passage, ~~opposing to~~ said cooling fin being arranged so as to oppose said cooling fan in an axial direction of said rotor so as to enable generation of a circulating cooling air flow which flows from said cooling fan via said cooling fin to return to said cooling fan.

9. (amended) An alternator for use in a vehicle, as defined in the claim 7, wherein ~~said bracket has both~~ brackets have side surface portions for closing down at both sides of said rotor, and ~~said at least one cooling fans are~~ fan is provided at the both sides of said rotor, respectively.

10. (amended) An alternator for use in a vehicle, as defined in the claim 7, wherein ~~said bracket~~ another said bracket has a side surface portion for opening ~~the~~ another side of said rotor, and ~~said at least one cooling fan also includes a~~ another cooling fan for passing ~~through an~~ air outside at the other side of said rotor.

Please add the following new claims:

--16. An alternator for use in a vehicle, as defined in the claim 1, wherein said at least one cooling fan and said cooling fin are arranged and configured so that the cooling air flow flows from a central portion of said at least one cooling fan radially outwardly from a periphery thereof and radially inwardly via said cooling fin to return to the central portion of said at least one cooling fan.

17. An alternator for use in a vehicle, as defined in the claim 7, wherein said at least one cooling fan and said cooling fin are arranged and configured so that the cooling air flow flows from a central portion of said at least one cooling fan radially outwardly from a periphery thereof and radially inwardly via said cooling fin to return to the central portion of said at least one cooling fan.--

IN THE ABSTRACT OF THE DISCLOSURE:

Please amend the abstract as follows:

ABSTRACT OF DISCLOSURE

~~In an~~ An alternator for use in an automobile includes brackets 70 for supporting a rotation shaft ~~6~~ at both sides of a rotor ~~4~~, being thermally connected to a stator ~~42~~ for supporting the stator ~~42~~, while one side of the rotor ~~4~~ is closed by ~~the~~ a bracket 70, A cooling water passages 15 passage is provided in the bracket ~~70~~, a cooling fan ~~54~~ is provided on the closed side of the rotor ~~4~~, and a cooling fin provided opposing to the cooling fan and in vicinity of the cooling fan ~~15~~ water passage, thereby enabling cool down of the stator and the rotor, effectively, with low noises, and thereby obtaining a high power output.